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Some South African Psocoptera from Termite Nests

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The material reported herein was sent to me for determination by Dr. W. G. H. Coaton of the Plant Protection Research Institute, Department of Agricultural Technical Services, Republic of South Africa. The specimens were collected by Mr. J. L. Sheasby in nests of termites in Transvaal and Cape Province. Dr. Coaton provided names of the host species.

Four species are included, of which one is described as a new subspecies of *Liposcelis bostrychophilus* Badonnel. Another is tentatively identified as *Liposcelis prenolepidis* (Enderlein). If the latter identification is correct, this is the second record for the species and the first African record. Both of the other two species appear to be new records for Africa, but both are readily distributed by agency of man, and both may have been introduced.

References in the literature to psocids in termite nests are very few. Townsend (1912) described *Psocatropos termitorum* (*Vulturos termitorum* Townsend) collected in a termite nest in Peru. Badonnel (1955: 21, 41, 45) described two species of Amphientomids from termite nests in Angola. Apparently neither of the two genera reported herein have been taken in association with termites previously.

Family Atropidae Pearman

Lepinotus patruelis Pearman, 1931.

The species has apparently not been reported previously from Africa. It is frequently carried in human commerce, and its introduction is possible. It has been reported from England, France, and the United States. Its original homeland is not known.

The South African specimen contains a single spermatophore of the type figured by Pearman. The specimen agrees closely with the described morphological features of British material but is somewhat smaller, with body length 1.54 mm.

Republic of South Africa: Transvaal: 9 miles from Pretoria towards Babsfontein, July 26, 1963, 1 ♀, in mound of *Trinervitermes trinervoides* Sjöst. The specimen was returned to Dr. Coaton.

Family Liposcelidae Enderlein

Genus *Liposcelis* Motschoulsky, 1852

Badonnel (1962, 1963) has proposed a division of the genus into two sections, four groups, and several subgroups. According to this system, *Liposcelis prenolepidis* (Enderlein), discussed below, falls in Section II, Group D.

Liposcelis liparus Broadhead, 1947.

This species has not previously been recorded from Africa. It was originally described from England, where it was taken in buildings. The South African material is somewhat larger than the British material, but agrees essentially in color, sculpture, and chaetotaxy.

Measurements [1] (in μ) :—

P_4[2]	V	f_1	f_2	f_3	Fl	Fw	T	t_1	t_2	t_3	SI	SII	Sa
94	270	73	71	90	320	160	260	700	35	48	36	34	109

[1] Micrometer unit for Fl, Fw, T, and $t_1 = 3.7\,\mu$; for P_4 and $t_1 = 1.7\,\mu$; for $f_{1,2,3}$, and $t_{2,3} = 1.12\,\mu$; for other measurements $= 0.85\,\mu$.

[2] P_4 = length of fourth palpal segment; V = width of vertex behind eyes; f_1, etc. = length of first flagellar segment, etc.; Fl = length of hind femur

Republic of South Africa: Transvaal: 11 miles from Pretoria towards Derdepoort, March 4, 1963, 2 ♀, in fungus chambers of main nest cavity of *Odontotermes latericius* Hav. One specimen was retained in my collection, and the other was returned to Dr. Coaton.

Liposcelis bostrychophilus termitophilus n. subsp. (♀)

Diagnosis:—Differing from typical *L. bostrychophilus* in possessing very markedly areolate sculpture of vertex and abdominal terga. Differing from form *granicola* Broadhead and Hobby in that lines separating areoles more distinct on vertex and medially on abdominal terga; tubercles of areoles of abdominal terga fewer, larger, and less distinct; many areoles with only tuberculate border.

Color (in alcohol one year): Head pale red-brown (darker and redder than in *L. prenolepidis,* described below). Thorax and abdomen pale straw brown, somewhat darker on clunium, nearly colorless on posterior membranous portions of abdominal terga 3–7 and postero-lateral regions of 8 (numbering system of Badonnel, 1963). Appendages very pale, nearly colorless. Eyes black.

Morphology:—Lacinia (Fig. 4) seemingly with median denticle somewhat larger than in other forms of the species. Median suture of vertex weakly indicated by a wavering, unsculptured line. Median suture of pronotum a faint, irregular line; that of mesonotum distinct. Parapsidal sutures indicated by breaks in sculpturing, with several setae oriented along them. Common trunk of gonapophyses as in *L. prenolepidis* (see Fig. 2). T-shaped sclerite (Fig. 1).

Sculpture of Integument:—Vertex (Fig. 5) with very distinct areoles, some polygonal, others arched in front, separated

+ trochanter; Fw = greatest width of hind femur; T = length of hind tibia; t_1, etc. = length of posterior first tarsal segment, etc.; SI = length of longest seta on abdomen anterior to epiproct and paraprocts (actually on clunium); Se (not present in this specimen) = length of longest seta on epiproct.

by deeply depressed lines. Areoles covered with rather indistinct tubercles (appearing somewhat more distinct at 645 × than at 860 ×). Tubercles forming dense row along anterior border of each areole. Abdominal terga 3 and 4 (Fig. 6) covered in anterior pigmented portions with very distinct transverse areoles, mostly arched posteriorly, and delimited by rows of large, diffuse-looking tubercles; in some areoles, no tubercles present other than those forming border; in others, several large, diffuse tubercles within areole. Posterior pigmentless portions of terga appearing granular, but only faintly areolate.

Chaetotaxy:—Setae of vertex fine, short (7 μ), sparse. On each side of head, two large setae behind antennal insertion. Prothorax with SI short, only a little longer than 5 or 6 other setae borne on lateral lobe. Prosternum with 2 anterior and 2 posterior setae. SII not distinguishable from other short setae of the region. Parapsidal setae 5 on each side. Mesosternum with row of 5 setae, thus sternal chaetotaxy falling within range of variation noted for type subspecies by Badonnel (1946). Abdominal pilosity fine, similar to that of vertex in length and spacing. Terga 8–10 laterally with rather sparse, short, truncated setae and with two longer setae on each side (MdX and MvX, notation system of Pearman, 1951), hence essentially same as figured by Badonnel (1962, fig. 49) for *L. b. granulosus* and as seen in form *granicola* from eastern United States. Epiproct with two lateral setae about 1.5 × as long as others; 7 terminal setae acuminate apically.

Measurements (in μ):—

P_4	V	f_1	f_2	f_3	Fl	Fw	T	t_1	t_2	t_3	SI	SII	Sa	Se
75	260	45	48	49	260	140	220	73	36	48	9	—	31	20

Type locality:—Republic of South Africa: Transvaal: 15 miles from Roodebank towards Kinross, September 13, 1963, 1 ♀, in nest cavity of *Ondontotermes badius* Hav. The type is in my collection (Normal, Illinois).

Liposcelis prenolepidis (Enderlein) (?)

Troctes prenolepidis Enderlein, 1909. Boll. Lab. Zool. Portici III: 338–339.

The species was originally described from California. The South African specimens agree with the original description in color, number and arrangement of ocelloids in the eyes, and number and arrangement of thoracic sternal bristles. The range of total body length measurements, taken on three specimens in alcohol (0.87, 0.96, and 0.97 mm) includes the figure given by Enderlein (0.95 mm). Enderlein states that the eye is small and that its pigment spot is small. These statements are true for the South African specimens as compared to other species of the genus. The identification is strengthened by ecological information: both the type series and the South African material were collected in subterranean situations and in association with colonial insects.

The following information supplements Enderlein's very brief description:

Morphology:—Lacinia (Fig. 7) with external denticle long, median and internal denticles subequal. Median suture of vertex weakly indicated. Median suture of pronotum a faint, irregular line; that of mesonotum distinct, parapsidals visible. Common trunk of gonapophyses (Fig. 1) slender, bifurcate basally. T-shaped sclerite (Fig. 3).

Sculpture of integument:—Vertex centrally densely covered with evenly spaced tubercles of medium size; the tubercles oriented in a double (in places single, in other places triple) row in region of median suture. Certain rows of tubercles appearing larger and darker, weakly delimiting areoles, the areoles more clearly delimited peripherally by presence of spaces between them. Abdominal terga same as central portion of vertex; areolar pattern clearly indicated only on sclerites of first two segments.

Chaetotaxy:—Setae of vertex fine, of medium length (10 μ), sparsely distributed. On each side of head, two larger setae behind antennal insertion. Prothorax with SI short, only a

little longer than 6 or 7 other setae of lateral lobe (mostly posterior in position). SII scarcely distinguishable in length from other setae of mesotergum. In 3 specimens examined, no variation noted in thoracic sternal chaetotaxy. Abdominal pilosity fine, in length similar to that of vertex. Terga 8–10 laterally with many short truncated setae, but with only two longer setae on each side (MdX and MvX). Epiproct with two lateral truncated setae about twice as long as others; 3 or 4 terminal setae acuminate apically. Hence chaetotaxy of abdominal apex essentially same as in *L. bostrychophilus* complex.

Measurements (in μ):—

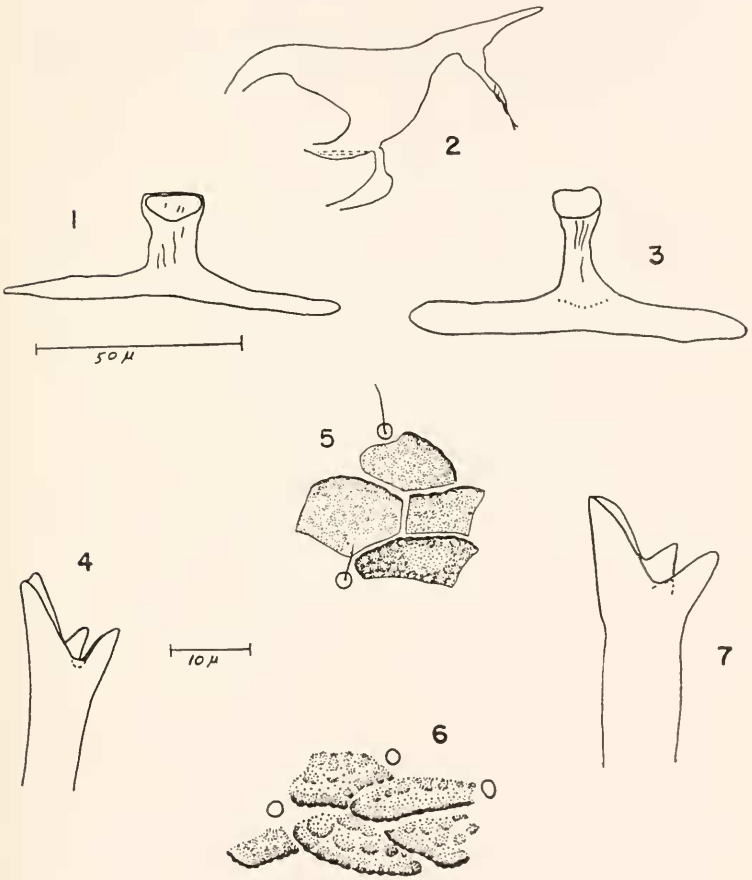
	P_4	V	f_1	f_2	f_3	Fl	Fw	T	t_1	t_2	t_3	SI	SII	Sa	Se
♀	71	260	40	46	40	260	150	220	63	36	46	11	14	37	34
♀	71	260	43	44	44	250	140	210	63	36	44	10	12	34	—
♀	66	260	38	43	38	240	130	200	66	34	37	9	10	31	32

Republic of South Africa: Cape Province: Namaqualand: 20 miles from Springbok towards Gamoep, April 7, 1963, 3 ♀, in nest of *Trinervitermes hainesi* Full. beneath low surface mound. Transvaal: 8 miles from Pretoria towards Babsfontein, February 14, 1963, 1 ♀, in mound of *Trinervitermes trinervoides* Sjöst.; 9 miles from Pretoria towards Babsfontein, February 14, 1963, 3 ♀, in mound of *Trinervitermes trinervoides* Sjöst.; 11 miles from Pretoria towards Babsfontein, July 19, 1963, 1 ♀, in mound of *Trinervitermes trinervoides* Sjöst.; Vlakfontein, 10 miles East of Pretoria, March 22, 1963, 4 ♀, in mound of *Trinervitermes trinervoides* Sjöst.

Discussion:—The agreement of the South African material with all of the features described by Enderlein assures that this material is at least very closely related to Enderlein's species, if not the same. The very great distance between the type locality (California) from South Africa does not necessarily argue against the identification, as very wide distributions, with or without the agency of man, are common in the Psocoptera.

The species is undoubtedly very closely related to *L. bostrychophilus* Badonnel. The chief difference lies in the sculpture of the vertex and abdominal terga, that of typical *L. bostry-*

chophilus (figure and description of Broadhead, 1950) showing the tubercles larger and less distinctly rounded, while the *granicola* form of that species has very distinctly areolate sculpture, as do the subspecies *L. b. granulosus* Badonnel and *L. b. termitophilus* n. subsp. *L. bostrychophilus* is larger (body length



Figs. 1, 4–6. *Liposcelis bostrychophilus termitophilus* n. subsp., ♀. 1. T-shaped sclerite, 4. Lacinal tip, 5. Sculpture of central region of vertex, 6. Sculpture of fourth abdominal tergum.

Figs. 2, 3, 7. *Liposcelis prenolepidis* (Enderlein) (?), ♀. 2. Common stem of gonapophyses, 3. T-shaped sclerite, 7. Lacinal tip.

1.1–1.25 mm) and somewhat darker in coloration, or at least that is true for the form *granicola,* which occurs in eastern United States, as well as for the two subspecies mentioned above. The absence of males in the South African material (12 ♀) as well as in the type series (4 ♀) suggests the possibility of its being a parthenogenetic form. The complete absence, as far as is known, of males in the *L. bostrychophilus* complex suggests the possibility that these forms as well as *L. prenolepidis* may be clonal segregates of a single agamic taxon.

Literature Cited

Badonnel, A. 1946. Rev. Zool. Bot. Afr. 39(2): 137–196.
——. 1955. Diamang Pub. Cult. 26: 11–267.
——. 1962. Psocoptères. *In* Cl. Delamare Deboutteville et al. Biologie de L'Amérique Australe. Vol. I, pp. 185–229.
——. 1963. Psocoptères terricoles, lapidicoles et corticoles du Chili. Ibid. Vol. II, pp. 291–338.
Broadhead, E. 1947. Trans. Royal Ent. Soc. Lond. 98: 41–58.
——. 1950. Trans. Royal Ent. Soc. Lond. 101(10): 335–388.
Motschoulsky, V. 1852. Études Entomologiques. Helsinfors.
Pearman, J. V. 1931. Ent. Mo. Mag. 67: 47–50.
——. 1951. Ent. Mo. Mag. 87: 84–89.
Townsend, C. H. T. 1912. Ent. News 23: 266–269.